

REMARKS

The specification is amended to correct typographical errors. No new matter is added.

Applicant gratefully acknowledges the Examiner's indication that Claims 2-4, 6-8 and 10-12 are patentable over the cited prior art. Claim 2 has been amended as an independent claim to include all features in its original base Claim 1. Claim 2 as amended and its dependent Claim 3 should be in a condition for allowance. Claim 10 has been amended as an independent claim to include all features in its original base Claim 9. Claim 10 as amended and its dependent Claims 11 and 12 should be in a condition for allowance.

Claims 1-12 remain pending. Reconsideration and allowance of the application are respectfully requested in view of the following remarks.

The Office Action contends a combination of Ito and Wetherell discloses Claims 1, 5 and 9 and renders these claims obvious under 35 USC 103(a). This contention, however, is respectfully traversed.

Claims 1, 5 and 9 describe methods and a device that obtain and use a difference between a first detector signal obtained from a first polarization of the input polarization and a second detector signal obtained from a second polarization that is orthogonal to the first polarization to indicate an amount and a direction of a deviation in a polarization of said light from a known direction. Ito, however, describes an electro-optic probe that has nothing to do with the subject matter of Claims 1, 5 and 9.

Claim 1 recites "using a first partial polarization beam splitter to split by reflection a fraction of light in one of first and second mutually orthogonal polarization directions

from an input beam to produce a first monitor beam" and "using a second partial polarization beam splitter to split by reflection a fraction of said light in said one of said first and second mutually orthogonal polarization directions from said input beam to produce a second monitor beam."

Ito, in contrast, does not disclose this aspect of Claim 1. Referring to FIG. 4 in Ito as specifically relied by the Office Action, the input light from the laser diode 11 is first transmitted through the PBS 9, the Faraday rotator 8, the half wave plate 7, the PBS 6, the quarter wave plate 5, the half wave plate 4 and the electro-optic element 2. This transmission modifies the polarization of the light from the laser diode 11. The reflection from the electro-optic element 2 is then directed back in the same optical path to be sampled by the PBS 6 and PBS 9. Hence, different from Claim 1, FIG. 4 in Ito manipulates the polarization of the input light from the laser diode 11 before sampling by the PBS 6 and PBS 9.

Claim 1 specifically states that "said first and second partial polarization beam splitters are oriented to have their polarization axes to be 90 degrees with each other." In this regard, the Office Action cites FIG. 4 and FIGS. 1-4 in Ito to show this feature. Review the cited FIGS. 1-4 and the text description for FIGS. 1-4 in Ito does not reveal any description by Ito on this feature. Therefore, the initial burden of prima facie showing is not made in the Office Action. Applicant respectfully requests the Patent Office to show how this feature of Claim 1 is described in Ito by citing numerical numbers in drawings and column and line numbers in the description.

In addition, Claim 1 recites using a difference between said first and said second detector signals to indicate an

amount and a direction of a deviation in a polarization of said light from a known direction.

The Office Action acknowledges that Ito does not describe this feature and cites Figures 3, 9 and 11 and description from Col. 7, line 5 to Col. 8, line 68 in Wetherell to show this feature in Claim 1. Applicants respectfully traverse this combination of the Ito and Wetherell.

First, to establish a prima facie case of obviousness under 35 USC 103(a), there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. MPEP 2143. The Office Action fails to provide any showing in this regard.

Ito describes electro-optic probe for an electro-optic sampling oscillator. Wetherell describes a polarization matching mixer using a local oscillator to control a PBS that receives the signal light. The electro-optic probes described in Ito and the polarization matching mixers described in Wetherell are completely different devices in structure, operate based on different mechanisms, and are used to achieve completely different functions. Upon review of Ito and Wetherell, Applicant fails to grasp any connection between Ito and Wetherell that would lead to the combination as suggested in the Office Action. Indeed, polarization beam splitters are used by both Ito and Wetherell. However, this seems to be where the commonality between Ito and Wetherell ends because polarization beam splitters are used by Ito and Wetherell in very different ways to achieve different functions in different device environments.

Applicant respectfully requests the Patent Office to show suggestion or motivation in Ito and Wetherell for the contended combination. Alternatively, Applicant respectfully requests the Patent Office to provide evidence for the knowledge generally available to one of ordinary skill in the art for the suggestion or motivation for the contended combination.

The second condition for establishing a prima facie case of obviousness under 35 USC 103(a) is that there must be a reasonable expectation of success for the contended combination. In this case, the Office Action completely fails to provide any indication how the cited signal processing features used in Wetherell's polarization matching mixer can be applied to the electro-optic probe in Ito. The differences in device structure, operating mechanism, and functionality of the Wetherell's polarization matching mixer and Ito's electro-optic probe do not suggest any expectation of success for the contended combination. The Patent Office may consider a drawing that illustrate features from Ito and features from Wetherell and interconnection of these features to show how the contended combination can be made and how the contended combination operates.

The third requirement for establishing a prima facie case of obviousness under 35 USC 103(a) is that the prior art references when combined must teach or suggest all the claim limitations. As discussed above, Ito fails to disclose features in Claim 1.

In addition, Claim 1 recites using a difference between said first and said second detector signals to indicate an amount and a direction of a deviation in a polarization of said light from a known direction. The Office Action contends that Figures 3, 9 and 11 and description from Col. 7, line 5 to Col.

8, line 68 in Wetherell discloses this feature of Claim 1. This contention is not supported by the cited portions in Wetherell.

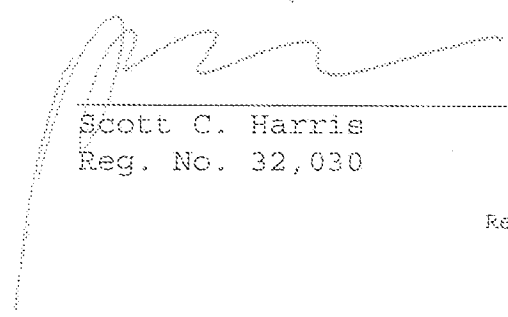
One feature in Wetherell is the use of the local oscillator to provide phase sensitive detection. Figures 3, 9 and 11 and description from Col. 7, line 5 to Col. 8, line 68 in Wetherell describe this use of the local oscillator to provide phase sensitive detection. This aspect in Wetherell, however, has nothing to do with using a difference between said first and said second detector signals to indicate an amount and a direction of a deviation in a polarization of said light from a known direction as in Claim 1.

In view of the above, Claim 1 is distinctly different from and thus is patentable over Ito and Wetherell. Claims 5 and 9 are patentable based on the above reasons for Claim 1 and on their own merits.

Applicant asks that all claims be allowed. Please apply a fee of \$225 for an extension of time for 2 months, and any other applicable charges or credits, to Deposit Account No. 06-1050.

Respectfully submitted,

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